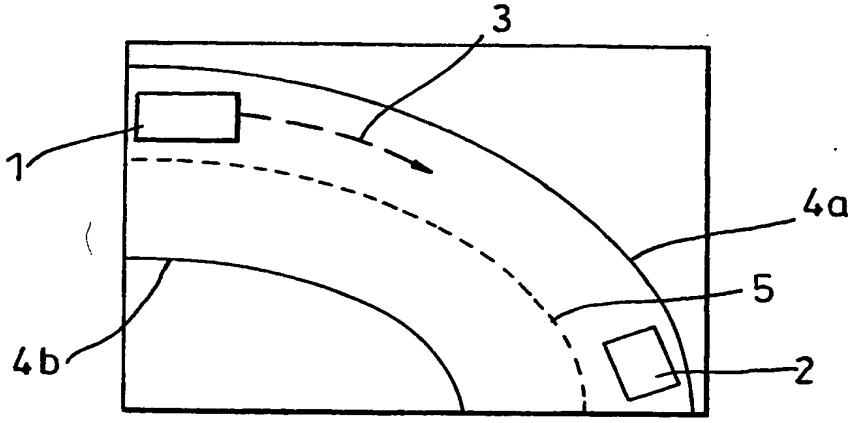

Fig. 1(a)

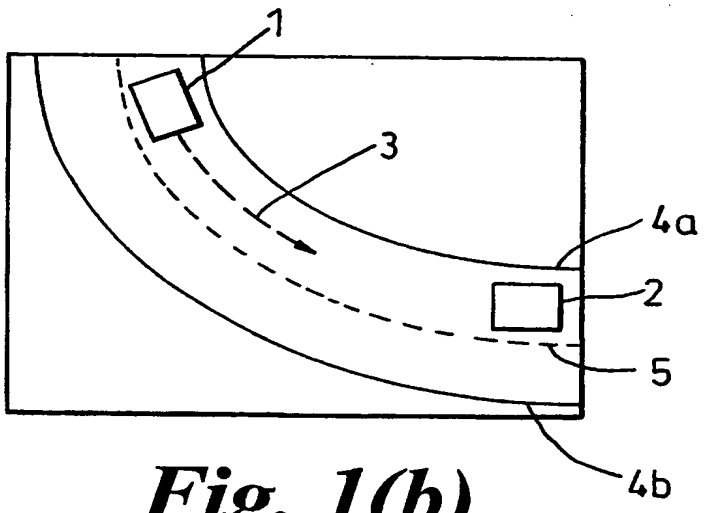

Fig. 1(b)

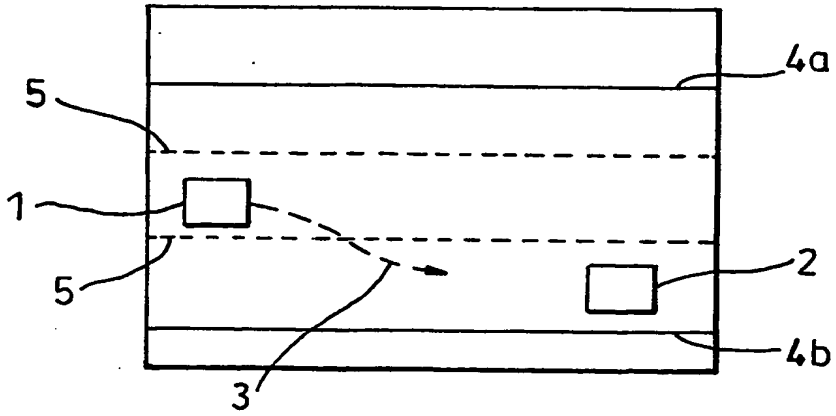

Fig 1(c)

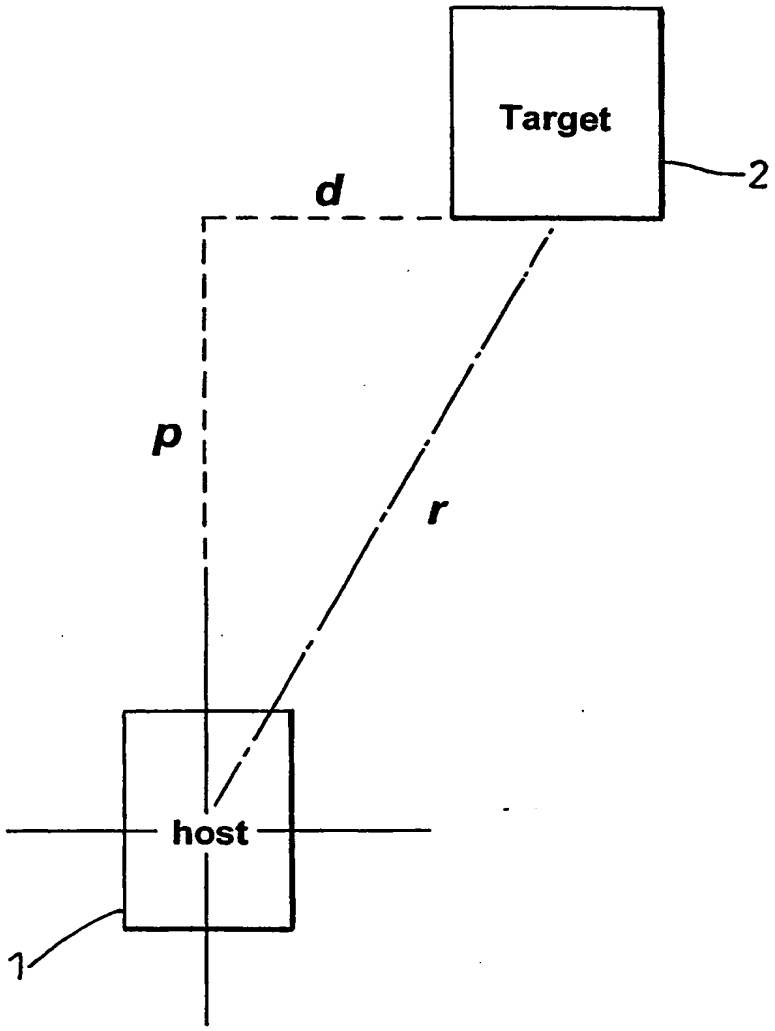

Fig 2

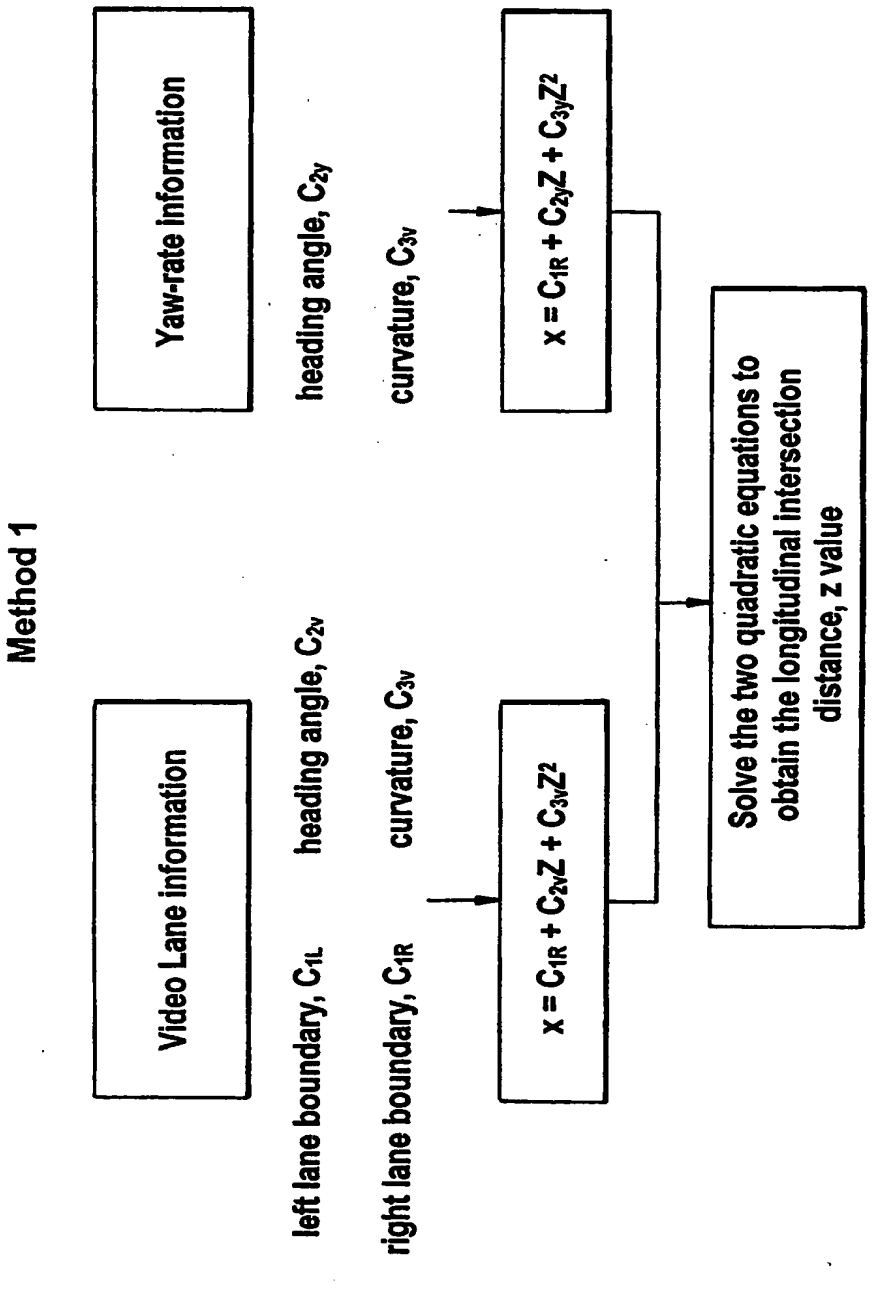
Method 1
Video Lane information
left lane boundary, C_{1L}
heading angle, C_{2v}
curvature, C_{3v}
right lane boundary, C_{1R}
$x = C_{1R} + C_{2v}Z + C_{3v}Z^2$
Yaw-rate information
heading angle, C_{2y}
curvature, C_{3y}
$x = C_{1R} + C_{2y}Z + C_{3y}Z^2$
Solve the two quadratic equations to obtain the longitudinal intersection distance, z value

Fig 3

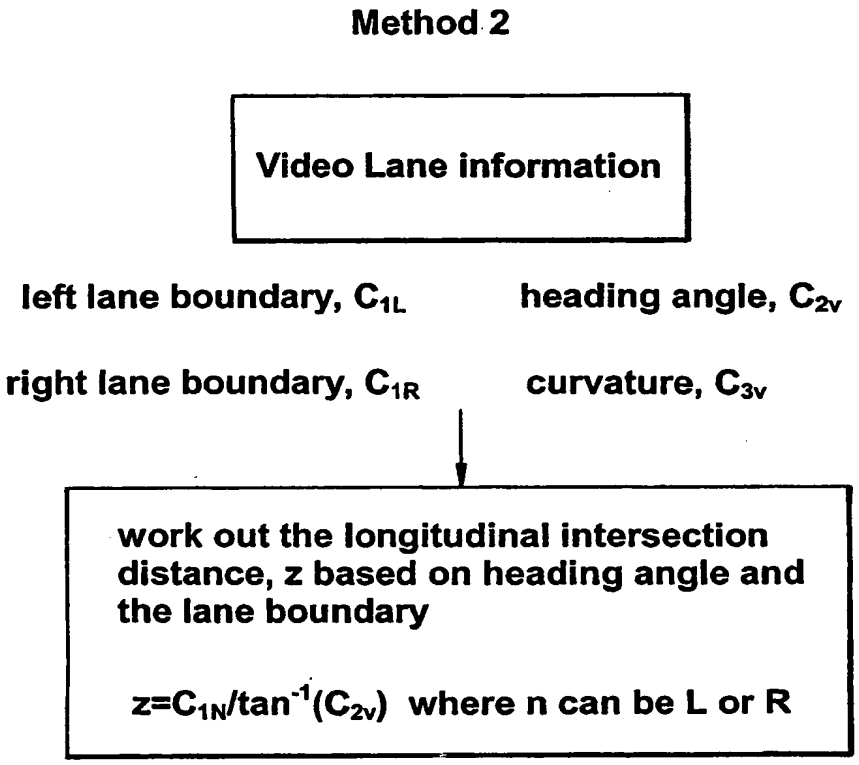
Method 2
Video Lane information
left lane boundary, C_{1L}
heading angle, C_{2v}
right lane boundary, C_{1R}
curvature, C_{3v}
work out the longitudinal intersection distance, z based on heading angle and the lane boundary
$z=C_{1N}/\tan^{-1}(C_{2v})$ where n can be L or R

Fig. 4

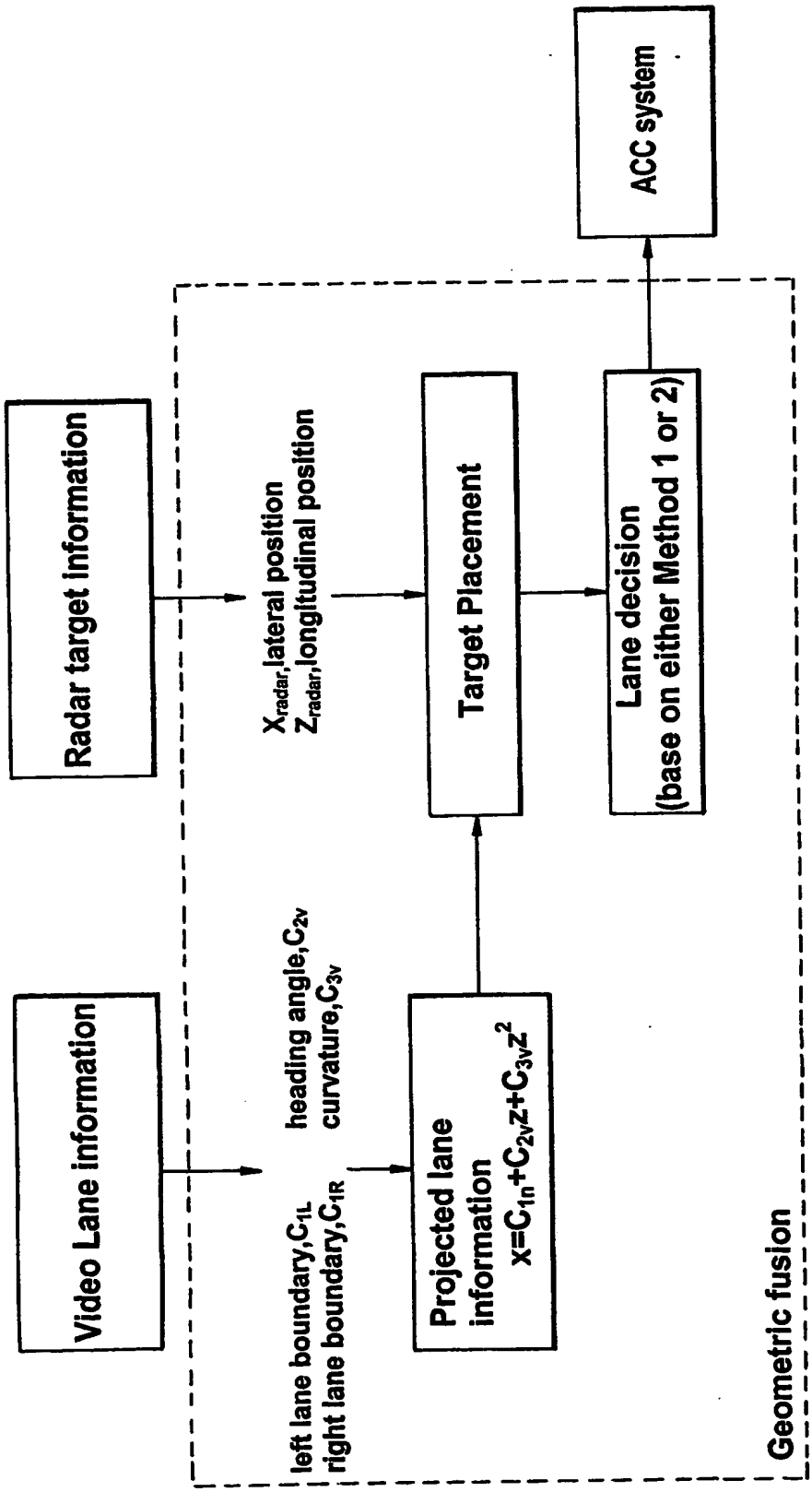
ACC system
Radar target information
X_{radar},lateral position
Z_{radar},longitudinal position
Target Placement
Lane decision
(base on either Method 1 or 2)
Video Lane information
heading angle,C_{2v}
curvature,C_{3v}
C_{1L}
C_{1R}
Projected lane information
$x=C_{1n}+C_{2v}z+C_{3v}z^2$
left lane boundary,
right lane boundary,
Geometric fusion

Fig 5

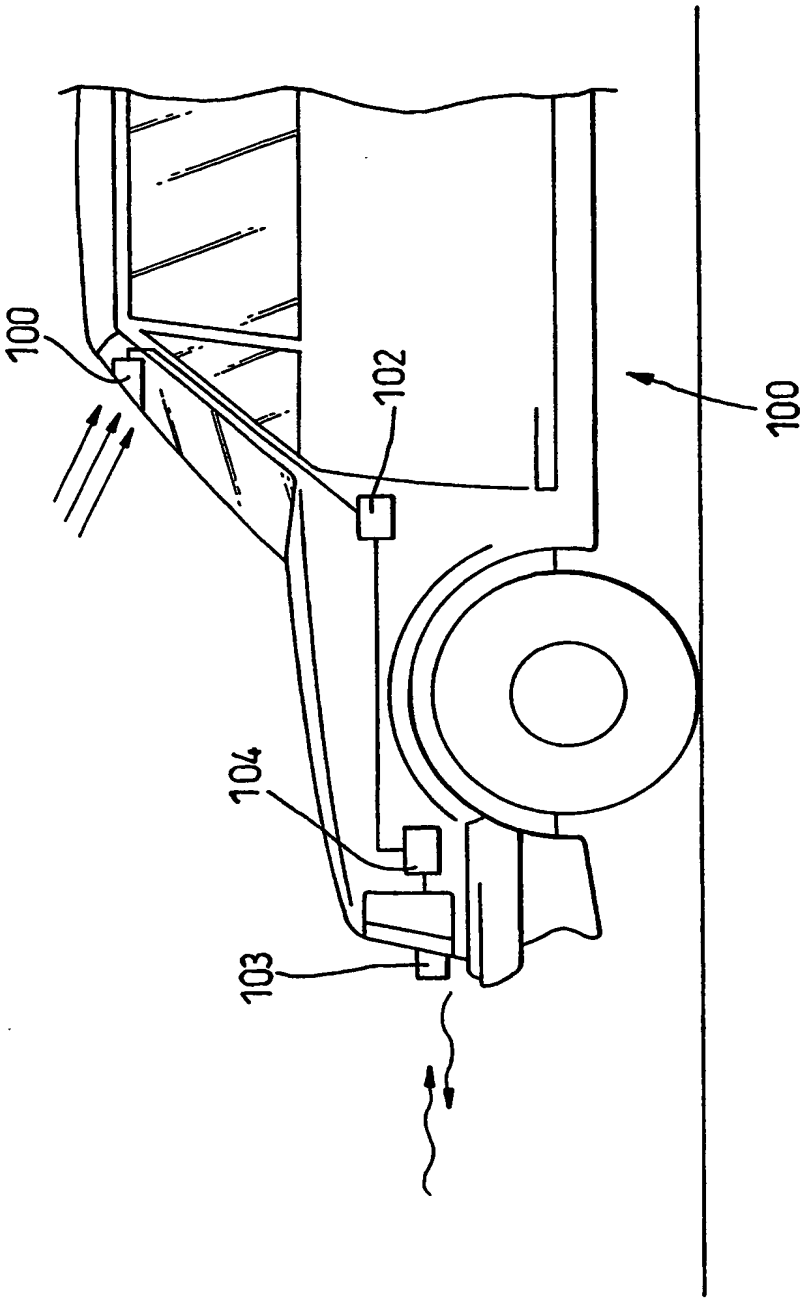

Fig. 6